

AMENDMENTS TO THE SPECIFICATION:

Please replace the title on pages 1 and 8 with the following amended title:

TECHNIQUE[METHOD OF FOR TRANSFERRING IMAGE INFORMATION FROM
REMOVING MEMORY OF SCANNING APPARATUSAPPARATUS]

Please replace paragraph [0004] with the following amended paragraph:

[0004] AThe scanning apparatus is a machine between a copy machine and a camera. In the past, athe scanning apparatus was so expensive that only art related workers could use it. Recently, the development of computer technology and market competition has caused the price of the scanning apparatus to drop drastically. AThe scanning apparatus has thus become one of the major peripherals of a personal computer.

Please replace paragraph [0005] with the following amended paragraph:

[0005] AThe scanning apparatus can be categorized into various forms according to price or function. For example, athe scanning apparatus includes the palm scanner, the paper feeding scanner, the card scanner, the film scanner and the flatbed scanner. Among various types of scanners, the flatbed scanner includes a glass flatbed to dispose a document or a picture thereon. AThe sensor then moves to read the data of the document or the picture. As the structure of the flatbed scanner is not very complex, and the operation is user friendly, the flatbed scanner is currently the most popular type of scanner.

Please replace paragraph [0006] with the following amended paragraph:

[0006] In the currently available scanning apparatus, a memory buffer, for example, a dynamic random access memory (DRAM) is used to temporarily store the data extracted by the image extraction device such as a charge-coupled device (CCD). The computer then reads and processes the data stored in the memory buffer. FIG. 1 shows a schematic block diagram of using

a conventional scanner 10 to transmit the data extracted by an image extraction device 12 and stored in a memory buffer 14 to a computer 16. In FIG. 1, to transmit the data extracted by the image extraction device 12 of the scanner 10, the image extraction device 12 temporarily stores the data in the memory buffer 14 of the scanner 10 first. When the computer 16 is ready for processing data, the data stored in the memory buffer 14 is then read by the computer 16. The data transmission between the image extraction device 12 and the computer 16 is described as follows. FIG. 2 is a sequence diagram of a ~~Transfer~~Dumping signal TR and a shift signal PH during the exposure time. As shown in FIG. 2, when the ~~Transfer~~Dumping signal TR is enabled (at a high level), the image extraction device 12 transmits each pixel of the data of one scan line to the computer 16 via the shift signal PH during the period of one ~~Transfer~~Dumping signal TR (the exposure time). Meanwhile, the shift signal PH is enabled at a high level, and the shift signal PH shifts one pixel of the data of the scan line during one period thereof. The period of the shift signal PH is constant. If the period of the shift signal PH is 1 ms and the scan line has 5400 pixels per inch, the image extraction device 12 will transmit the data of the scan line to the computer 16 within 5400 ms (the exposure time). If the computer fails to read the data of the scan line within the exposure time, a data reading error is caused. Therefore, the memory buffer 14 is used to temporarily store the data of the scan line transmitted via the shift signal PH, providing sufficient time for the computer 16 to read the data of the scan line. As the conventional scanner 10 requires the memory buffer 14 to ensure the correct data transmission between the image extraction device 12 and the computer 16, the cost is increased.

Please replace paragraph [0008] with the following amended paragraph:

[0008] In the method of removing a memory from the scanning apparatus including an image extraction device provided by the present invention, each pixel of data of a scan line is transmitted to the computer via a shift signal during a period of a ~~Transfer~~Dumping signal TR. The period is also referred to as an exposure time. The period of the shift signal is adjusted according to the speed of reading the data of the scan line, so that the computer will finish reading the data within the exposure time.

Please replace paragraph [0011] with the following amended paragraph:

[0011] In one embodiment of the present invention, the TransferDumping signal TR is enabled at a high level.

Please replace paragraph [0015] with the following amended paragraph:

[0015] The present invention further provides a method of removing a memory from a scanning apparatus. The scanning apparatus includes an image extraction device. During a TR period of a TransferDumping signal TR, also referred to as an exposure time, the image extraction device extracts and transmits each pixel of data of a scan line to a computer. In this method, when the computer processes the data at a fast processing speed, the period of the shift signal is increased in accordance with the processing speed. When the computer slows down the speed to process the data, the period of the shift signal is reduced. Meanwhile, the computer has to finishing reading the data of the scan line within the exposure time.

Please replace paragraph [0019] with the following amended paragraph:

[0019] FIG. 2 shows the sequence diagram of a TransferDumping signal TR and a shift signal during a period of an exposure time;

Please replace paragraph [0021] with the following amended paragraph:

[0021] FIG. 4 shows the sequence diagram of a TransferDumping signal TR and a shift signal PH within an exposure time according to one embodiment of the present invention.

Please replace paragraph [0023] with the following amended paragraph:

[0023] The following describes the method of removing the memory such as a dynamic random access memory of a scanning apparatus 30. In FIG. 4, the sequence diagram of a TransferDumping signal TR and a shift signal PH within an exposure time is illustrated. In this embodiment, the TRRT signal and the shift signal PH are both enabled at a high level. As shown in FIG. 4, when the TransferDumping signal TR is enabled and during a period thereof (also

referred as an exposure time as shown in FIG. 4), each pixel of data of a scan line is transmitted to the computer 34 from the image extraction device 32 via the shift signal PH. The exposure of the ~~Transfer~~Dumping signal TR can be either constant or variable. In one period of the shift signal PH, the shift signal PH shifts one pixel of the data of the scan line. As shown in FIG. 4, the period of the shift signal PH is variable. That is, the period of the shift signal Ph is varied according to the speed of reading the data of the scan line by the computer 34. However, the computer 34 has to finish reading the data of the scan line within the exposure time. In other words, when the computer 34 uses a fast speed to process the data of the scan line, the period of the shift signal PH is adjusted faster accordingly. On the contrary, when the computer 34 cannot process the data of the scan line within the exposure time with a slow processing speed, the period of the shift signal PH is slowed down according to the slow processing speed. Further, if the shift signal PH transmits each pixel of the data of the scan line to the computer 34 in a time shorter than the exposure time (the reading time as shown in FIG. 4), a waiting time (the waiting time as shown in FIG. 4) is added to equal the exposure time, such that the computer can finish reading the data of the scan line within the exposure time as required. For example, when the period of the shift signal PH is shortened from 1 ms to 0.5 ms and the exposure time is 5400 ms for a scan line including 5400 pixels per inch, as the reading time is 2700 ms only, a waiting time of 2700 ms has to be added to meet the requirement of finishing reading the data of the scan line in the exposure time. According to the above, the scanning apparatus 30 does not include a memory buffer for storing the data of the scan line, such that the cost of the scanning apparatus 30 is reduced.

Please replace the Abstract of Disclosure on page 8, with the following amended Abstract of the Disclosure (a separate sheet is attached at the end of this paper and, as amended):

Abstract of the Disclosure

A technique for transferring image information from~~method of removing memory of~~ a scanning apparatus includes adjusting the~~The~~ period of a shift signal is ~~adjusted~~ according to the speed of reading data from a scan line by a computer instead of using a memory buffer. Therefore, correct data transmission between the image extraction device and the computer can be achieved with the~~As a result of reducing,~~ the cost of the scanning apparatus ~~is reduced~~.